

### REMARKS

In the aforementioned Office Action, Claims 17-18 were rejected under 35 U.S.C. §102(b) as being anticipated by Chutjian [5,596,193], Claim 17 was rejected under 35 U.S.C. §102(b) as being anticipated by Chutjian [6,049,052], and Claims 1-7, 13 and 20 were rejected under 35 U.S.C. § 102(e) as being anticipated by Mordehai [6,703,610]. In addition, Claims 8-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mordehai [6,703,610] in view of Kobelco; Claims 10-12, 14-16, 19, and 21-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mordehai [6,703,610] in view of Chutjian [6,049,052]. By this communication, Claims 10 and 13-19 have been cancelled. Claims 1-9, 11, 12 and 20-25 are pending in the Application. Reconsideration of the rejected claims is hereby respectfully requested in view of the foregoing amendments and the remarks set forth below.

#### Rejection Under 35 USC §102(e)

Claims 1-7, 13 and 20 were rejected under 35 U.S.C. §102(e) as being anticipated by Mordehai [6,703,610]. Applicant submits that each of the rejected claims recites at least one element that is not disclosed by Mordehai, and that the 35 U.S.C. §102(e) rejection should consequently be withdrawn.

Claim 1 as currently amended recites a skimmer comprising a body having an orifice through which ions can pass, wherein at least a portion of the body comprises titanium metal. Claim 1 is supported by the specification, and in particular by page 9, lines 18-26 which recite *"The ion transfer component 135 comprises in whole or in part titanium metal. For example, the ion transfer component 135 can be made of commercially pure titanium including commercial grade I, II, III or IV titanium. Also for example, the ion transfer component can be made of an alloy of titanium, including for example an alloy of titanium and aluminum, vanadium, molybdenum, manganese, iron, platinum, tin copper, niobium, zirconium, and/or chromium. The titanium alloy can be an alpha, alpha-beta, or beta type alloy. As used in this specification, the term titanium metal indicates that the titanium is present in metallic form,*

*rather than as a part of a non-metallic compound such as titanium nitride, titanium oxide, or titanium sulfide."*

As indicated on page 11, lines 6-15, and page 12, lines 10-20, one of the reasons that titanium metal was selected for use as the skimmer material is that it keeps the gas "hot" during the adiabatic expansion process which is a "cooling" process. The relatively low thermal conductivity of titanium metal inhibits heat transfer to the skimmer and allows the gas hitting the skimmer to cool relatively slower and therefore remain hotter than it would be if a stainless steel or plastic coated with titanium alloy was used as the skimmer material. Stainless steel skimmers act as natural heat sinks and are detrimental to the process of ion transmission in terms of maintaining the gas temperature during the expansion.

The Examiner reads Mordehai as disclosing the use of a titanium in metallic form. However, applicant asserts that the titanium disclosed in Mordehai is titanium of a non-metallic form. Examples of "titanium" provided in the Mordehai specification (at column 5, lines 10-12). The Mordehai specification states *"The skimmer 11 of the present invention may comprise a titanium nitride material or may be applied as a coating."* The Mordehai specification goes on to state (at column 5, lines 29-33) that *"Titanium nitride exhibits exceptional inert properties with respect to many such analytes. Other nitrides include, but are not limited to, titanium carbon nitride, titanium aluminum nitride, aluminum titanium nitride, chromium nitride, zirconium nitride and tungsten nitride."* Applicant respectfully submits that the materials mentioned in the Mordehai specification are not examples of titanium in metallic form, but of non-metallic compounds, in particular, titanium nitride (typically applied as "coatings"). The titanium compounds disclosed by Mordehai (which are in the form of ceramics), so do not possess the low thermal conductivity of titanium metal and hence would not provide the benefit of reducing heat transfer to the skimmer and consequent lessening of the gas cooling, as is achieved by the claimed invention. Furthermore, nowhere does Mordehai teach the desirability of reducing heat transfer from the gas, so on of ordinary skill in the art would not be motivated to replace the titanium nitride coated structures disclosed by Mordehai with structures made of titanium metal.

In light of the above, applicant submits that Claim 1 as now amended is not anticipated by Mordehai, and reconsideration of the rejection of Claim 1 under 35 U.S.C. §102(e) is therefore respectfully requested.

Claims 2 as now amended depends from Claim 1, and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1. Furthermore, Claim 2 recites that the entire body comprises titanium metal. Mordehai does not teach or suggest that the entire body comprise titanium metal as recited in the current claim.

Claim 3 as now amended depends from Claim 1, and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1. Furthermore, Claim 3 recites at least a portion of the body being coated with titanium metal. Mordehai does not teach or suggest that a portion of the body is coated with titanium metal as recited by the current claim.

Claim 4 as now amended depends from Claim 1, and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1.

Claim 5 as now amended depends from Claim 1, and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1.

Claim 6 depends from Claim 1, and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1. Furthermore, Claim 6 recites that the titanium metal comprises an alloy of titanium. Mordehai does not teach or suggest a titanium metal comprising an alloy of titanium as recited by the current claim.

Claim 7 as now amended depends from Claim 6, which in turn depends from Claim 1, and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claims 1 and 6. Furthermore, Claim 7 recites that the alloy of titanium is an alloy of titanium and one or more of the metals in the group consisting of aluminum, vanadium, molybdenum, manganese, iron, platinum, tin, copper,

niobium, zirconium, and chromium. Mordehai does not teach or suggest a titanium metal alloy as recited by the current claim.

Claim 13 has been cancelled, and respectfully requests that the 35 U.S.C. §102(e) rejection be withdrawn.

Claim 20 as now amended depends from Claim 1, and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1.

#### Rejection Under 35 USC §103(a)

Claims 8-9 were rejected under 35 USC §103(a) as being unpatentable over Mordehai in view of Kobelco. Applicant submits that each of the rejected claims as now amended recites at least one element that is not disclosed by Mordehai or Kobelco, and that the 35 USC §103(a) rejection should consequently be withdrawn.

Claim 8 as now amended depends from Claim 1 and inherits all the limitations thereof, and is submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1. Again, the Examiner reads Mordehai as disclosing the use of titanium in metallic form. Applicant respectfully submits that the materials mentioned in the Mordehai specification are not examples of titanium in metallic form, but of non-metallic compounds. The non-metallic titanium compounds (e.g. titanium nitride) disclosed in Mordehai are highly dissimilar from and have substantially different properties (including but not limited to thermal conductivity) relative to titanium metal (pure metal as well as alloys). Thus, one of ordinary skill in the art would not be motivated to substitute titanium metal (the properties of which are listed in the Kobelco reference) for the non-metallic compounds described in Mordehai.

Claim 9 as now amended depends from Claim 8 and inherits all the limitations thereof, and is submitted to be patentable over Mordehai in view of Kobelco for at least the reasons advanced in connection with Claim 8.

Claims 10-12, 14-16, 19, 21-25 were rejected under the 35 USC §103(a) as being unpatentable over Mordehai in view of Chutjian.

Claim 10 has been cancelled, and respectfully requests that the 35 U.S.C. §103(a) rejection be withdrawn.

Claim 11 as now amended depends from Claim 1 and inherits all the limitations thereof, and is submitted to be patentable over Mordehai in view of Chutjian for at least the reasons advanced in connection with Claim 1.

Claim 12 as now amended depends from Claim 1 and inherits all the limitations thereof, and is submitted to be patentable over Mordehai in view of Chutjian for at least the reasons advanced in connection with Claim 1.

Claim 14-16 and 19, have been cancelled, and applicant respectfully requests that the 35 U.S.C. §103(a) rejections be withdrawn.

Claims 21-25 as now amended all depend from Claim 20, which in turn depends from Claim 1. Claims 21-25 therefore inherit all the limitations of claim 1, and are submitted to be patentable over Mordehai for at least the reasons advanced above in connection with Claim 1. Mordehai does not teach or suggest the use of titanium in metallic form. Nor does Chutjian teach or suggest the use of titanium in metallic form. So if one of ordinary skill were to attempt to combine these references, arguably, the combination cannot arrive at the invention recited in Claims 21-25.

In view of the above, it is submitted that the Application is now in condition for allowance and such favorable action is respectfully requested.


The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-3267.

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